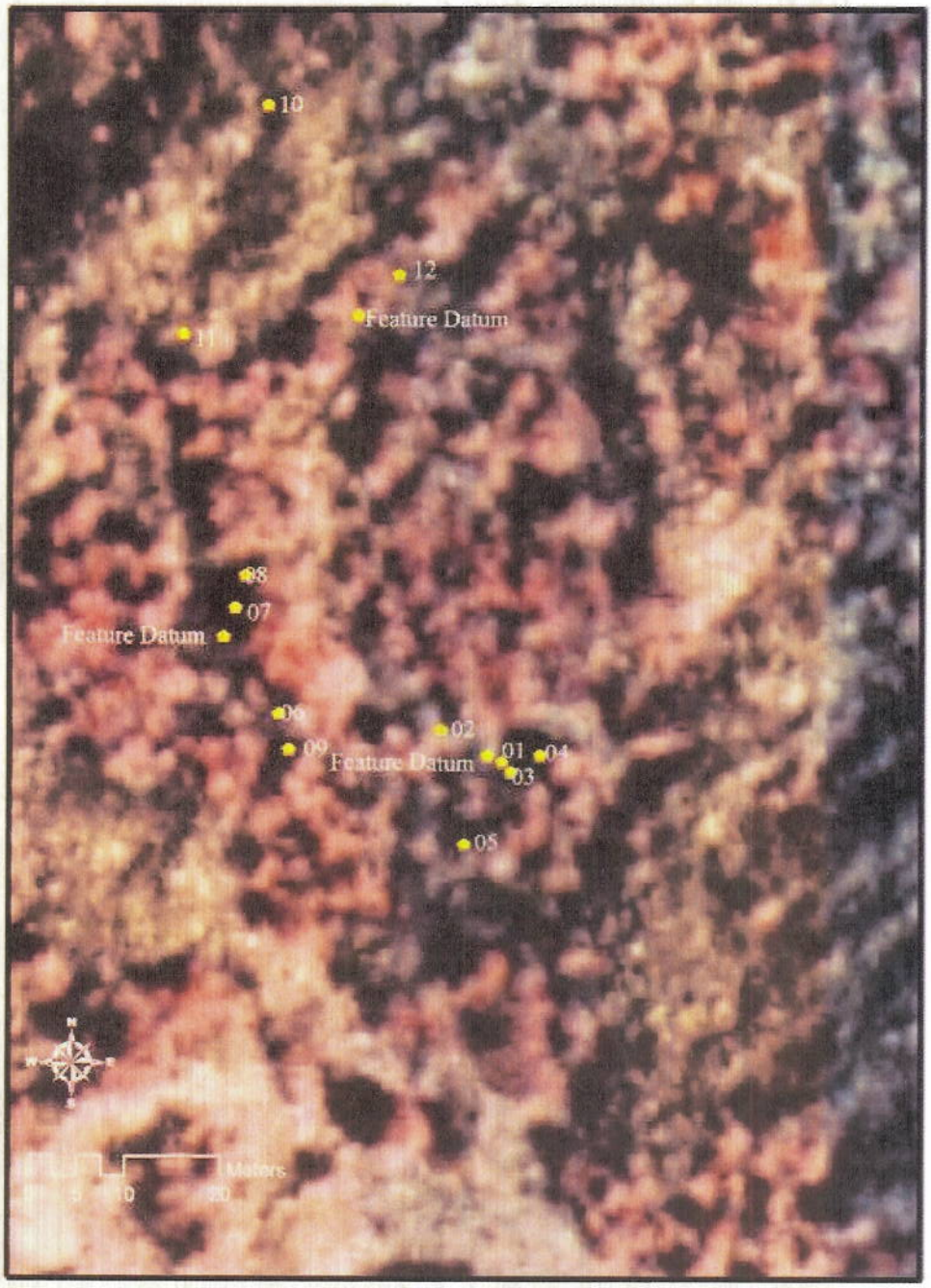

Figure 21. Site 23621 Feature 4 Plan Map

Feature 4 (GANDA #664) was described in the GANDA field notes as consisting of four or more excavated pits. The current project identified and recorded a cluster of twelve (12) excavated pits distributed over an area covering 70 x 68 m. The ground surface in the area is undulating, and

the pāhoehoe flow is in a low spot surrounded by ʻaʻā ridges. The pāhoehoe appears to be naturally broken, and in some areas it appears that the naturally broken rocks were moved around. This was noted, but as the rock that had been moved does not form any clear structures they were not recorded. Feature 4 is located outside of Range 11T and the SDZ.

Several features that were at some point recorded as a part of this site are not discussed here. Time did not permit the relocation of one additional feature recorded by GANDA, feature 1 (GANDA # 657). This feature was described as consisting of a single excavated pit. An additional feature location, GANDA 665, was originally described in the GANDA field notes but does not appear in Table 11 of the GANDA report (Robins & González 2006: 68). The time frame devoted to the current project did not allow for an examination of this area to determine the presence or absence of excavated pits in this area. GANDA Site number 680, which appears in Table 11 (Robins & Gonzales 2006) as Fe. 11, was apparently at some point identified as Site 23464 and the subsequently discarded and included as part of Site 23626.

Conclusions

The Saddle region was probably significant for a limited range of purposes prior to European contact. Oral traditions and genealogies clearly indicate that the area and its major landmarks were significant to the culture and religion of Hawaiians as they feature in origin and creation stories, and at the beginning of genealogies (Maly & Maly 2005). Physical manifestations of this include the mountains, the *puʻu*, and the locations named in the various legends and genealogies.

Most of the districts of Hawaiʻi Island originate in the area between the mountains. It is possible that boundary markers of some type, including cairns, *heiau* or petroglyphs, might be present in boundary areas to designate them as such.

Oral traditions also make it clear that the Saddle region was traversed regularly via a series of interconnecting pathways. This travel was normally from one part of the island to another, one coastal region to another. An exception of this is the story of ʻUmi-a-Liloa, who is said to have set up residence in the region between Mauna Loa and Hualalai. Trails would be the primary remains of this use of the region, though temporary habitation sites might also be present. Other site types related to this use of the Saddle region might include petroglyphs and cairns.

Resource procurement represented a significant use of the Saddle region in the pre-Contact era. Basalt was obtained from Mauna Kea, and other areas of fine-grained basalt quarries have been identified in the Saddle region. Volcanic glass was also quarried in the Saddle region, and these resources are distributed across the Saddle. Hawaiians also climbed the mountains to obtain birds for both feathers and foods. The *ʻuaʻu* (dark-rumped petrel) nested in the area in the past, and the fledglings were delicacies reserved for the *aliʻi*. Given both the distances and the environmental factors, the people who came to obtain these resources probably set up temporary habitation sites that were used for short periods of time, and possibly over consecutive years. Excavated pits, where the lava has been broken to expose voids beneath and rocks variously removed and sometimes replaced, have been associated in the archaeological literature with hunting for the *ʻuaʻu*. Pits created in this context may either have been intended to create a habitat in which the birds would nest, or breaking open existing lava tubes to get to the birds. The historical literature indicates that the latter is less likely, as there is documentation of an alternative method for removing the fledglings from a burrow, using a long stick. Other suggestions have also been made for these pits, including sweet potato cultivation and volcanic glass (see Moniz Nakamura *et al.* 1998). It is probable that a similar site type – excavated pits – was in different areas the result of different activities.

The excavated pits that were documented during this project were excavated in areas of weathered pāhoehoe surrounded in most places by ʻaʻā. Other archaeological sites within 1 km of Site 23621 include lava tubes used for habitation, trails, volcanic glass quarries to both the south and east, and other clusters of excavated pits. The following discussion of sites within a 1 km radius of Site 23621 provides some context for use of this area that may help to interpret past activities in the area of Site 23621, and therefore aid in the interpretiation of function for these pits.

Site 23626 is within the boundaries of site 23621. The physical remains do not clearly indicate repeated use over a series of years. Charcoal samples were taken from an ash deposit that the excavators identified as possibly rakeout. The charcoal samples themselves were identified as possible burned roots; radiocarbon dates on the material both fell within the range of A.D. 1640-1950 at 2 σ. About 59 g of bird bone was recovered from this site, some volcanic glass flakes, a *kī* leaf sandal, several fire altered bird stones, one of which had been re-used as a hammerstone. Two 0.5 x 0.5 m units were excavated at this site, one in the south and one at the western side of the sink behind a wall. The stratigraphy varied between the two units, as did the physical remains (Shapiro & Cleghorn 1998; Robins & González 2006).

Site 19490 is a complex site composed of multiple features located to the north of Site 23621. The trail starts about 500 m from the closest feature of 23621, and the lava tube habitations are about 760 m from the closest feature of 23621. There are three lava blisters and one lava tube with physical remains inside, two trail segments, and *ahu*. Feature A lava blister contained scattered bird bone, volcanic glass, a firebrand, and a burned wooden pole, as well as a complete gourd adjacent to an upright stone slab, behind two stacked rocks at the end of one lava tube. This habitation site has not been excavated. Feature C lava tube contained extensive cultural material on the surface, including bird bones, gourd fragments, volcanic glass artifacts, vegetable matting, fire brands, charcoal, *ʻopihi* shells, *kukui* nut fragments, and basalt artifacts. Concentration of bird bones and charcoal along the walls indicates efforts at clearing the floor of debris, and therefore probable re-use of the site for multiple habitation episodes. Excavation of a 1 x 1 m test unit at the entrance of the main tube uncovered multiple layers of ash deposits, as well as some heat affected basalt rocks that were likely used in an *imu*. Volcanic glass artifacts, basalt artifacts, mammal bone, fish bone, and sea and land bird bone, as well as egg shells, were recovered from the excavations. Stratigraphic provenance is not provided for the faunal material, and the artifacts are only quantified for one stratigraphic level, but the site appears to be a rich, well-used habitation site. Although the interpretation of the excavation was of an *imu,* given the relatively horizontal nature of the deposits and the layering this area may have been used to deposit ash and rocks from firepits, probably including *imu.* Stratigraphic locations for radiocarbon samples are not specified in the report (two excavation layers are given, with three samples in one layer). Two charcoal samples returned dates of A.D. 1450-1660 and 1480-1660, while the other two returned multiple intercepts within the date ranges between A.D. 1490 to 1950 and 1650 to1950, respectively, at 2 σ confidence level. The latter three dates derived from the same, upper, stratigraphic layer. Feature D is a small blister shelter with bird bone and two volcanic glass fragments on the surface. Feature E is a small lava tube with an ash concentration and a volcanic glass blade on the floor surface, and a basalt hammerstone outside of the tube. One trail segment extends for about 250 m in an approximately northeast to southwest trending direction from the lava tubes. The other segment is oriented east and west, is visible from Feature A lava tube, and is evident for about 50 m. Three *ahu* are located on an ʻaʻā ridge north of the lava tubes. Recent military debris is distributed throughout the site area (Shapiro & Cleghorn 1998; Robins & González 2006; Garcia & Associates n.d.).

Site 21308 is a blister shelter containing four pieces of bird bone 210 m southeast of Site 23621. No other artifacts were identified on the surface, and the site was not excavated (Roberts et al. 2004). Site 21309 is another lava tube habitation site nearby with one bird long bone in a

crevice, and a small amount of charcoal at the western end of the cave. This site is east of 21308 (Roberts et al. 2004). Site 21309 is about 400 m southeast of 23621.

A number of volcanic glass quarries are located around to the east and south of Site 23621. Site 21666 is a volcanic glass quarry complex covering 14.6 hectares and including 388 individual volcanic glass quarries. Some other features, such as *ahu* and caves, are associated with some of the quarries. The closest elements of this site (Features 104 and 197) are 810 and 1015 m from Site 23621 (Williams 2002; Roberts et al. 2004). Williams noted the presence of a possible excavated pit among the volcanic glass quarries, and that in some cases pahoehoe covered volcanic chill glass was excavated when nearby exposed volcanic chill glass was not quarried. Site 21672 is also volcanic chill glass quarry complex located 815 m southeast of Site 23621. Site 21672 covers an area 1175 m^2 and contains 9 individual quarry locations (Roberts et al. 2004). Site 21673 is a volcanic chill glass quarry located about 840 m southeast of site 23621, comprised of four individual quarry areas over an a 411m^2 area (Williams 2002; Roberts et al. 2004). Site 21674 is a volcanic chill glass quarry site 570 m from 23621, covering an area of 62 m^2 and consisting of two quarried areas. Site 23545 is a volcanic glass quarry 290 m southeast of Site 23621, encompassing 180 m^2 and including three quarry locations, each of substantial size (32 m^2 to 101 m^2). Site 23546 is 570 m southeast of Site 23621, encompasses 92.6 m^2, and includes five quarried areas (Roberts et al. 2004). Site 23458 is a volcanic glass quarry with elements about 300 m to the south of Site 23621. The site consists of 14 quarried areas extending over 6.6 hectares.

Elements of Site 23455 are about 830 m northeast of 23621. This is another complex of excavated pits, including more than 170 individual pits. This site includes some features to the west of the Range 11T project area as well. A bulk sediment sample was collected from Feature 8a of this site and analyzed. The results of the analysis of chemical elements, microflora, and microfauna did not show any physical evidence of avian nesting in this pit (Brown et al. 2006).

The excavated pits remain something of an enigma in Hawaiian archaeology. It is possible that the archaeological category "excavated pits" encompasses several functional categories that have resulted in similar remains. Some of the pits may have been the result of either creating habitat for nesting sea birds or seeking access to existing burrows. In some parts of the island some of these pits may have been used for sweet potato cultivation, as described in the ethnohistoric literature. It is unlikely in the setting of Range 11T that sweet potato cultivation took place, both because of the harsh climatic conditions and because of the distance from any regular habitation sites. The sediment analysis, though limited, also indicates that many of them may not have supported birds in a nesting setting. Egg shells have survived in some archaeological sites (19490), so if they were present and if the nesting birds were inclined to leave the shells in the nest following hatching, it is likely that these shells would have survived. In general, insufficient details are recorded about excavated pits during projects to distinguish variations among the pits.

The excavated pits examined for this project appear to be the remains of a search for something. In a number of cases it was clear that not only was an area with a void excavated, but adjoining areas with a lower layer of pāhoeohe were also pursued. In addition to bird nests, water and volcanic glass are other resources that might have been pursued. There are lava tubes in the vicinity of Site 23621, as discussed above, but water collection features have not been recorded in any of these. Gourd fragments were recorded at Site 19490.

In discussing volcanic chill glass quarries in the Red Leg Trail vicinity to the east of Site 23621, Williams noted that "in some areas the overlying pahoehoe was quarried to expose chill glass beneath the overlying surface" (2002: 69). The chill glass quarries are located within the k4 Mauna Loa volcanic flow, which dates to between 200 and 750 B.P. Most of the excavated pits in the area, both site 23621 and others, are on the older k2 flow (1500-3000 B.P.), and are adjacent to flows with volcanic glass quarries. Site 23621 lies in an area that is dominated by ʻaʻā lava. The features of Site 23621 are found on restricted areas of pāhoehoe among the ʻaʻā. If the excavated

pits in this area were indeed the result of a search for volcanic glass, it may have been a prospecting type of search and volcanic glass was not necessarily found. Roberts et al. (2004) note one excavated pit that contained volcanic glass flakes (feature 138 of Site 23455).

The foregoing discussion is intended to point out some of the possible activities that could have resulted in the production of the excavated pits. Further research that could help to answer questions about the past use of these pits would include expansion of the analysis of sediments from a larger sample of pits, development of a better understanding of quarrying techniques for volcanic glass to allow comparison with activities in the areas of excavated pits. In the interest of time this project did not map individual pits and the locations of rocks in and around them; such a project might provide useful information about variation between pits, and similarities and differences with areas in which volcanic glass was quarried.